roof sloping hot gases and their stream. fuel consumption quantity of gases

Moreover, according to this principle, the use of a roof sloping upward tends to increase the velocity of flow of the hot gases and in this manner to decrease the thickness or depth of their stream. They are thus kept away from the hearth, and the fuel consumption is increased, as it is necessary to increase the quantity of gases flowing in order to force them to lick the hearth. At the same time, these statements should not lead to the conclusion that contemporary continuous reheating furnaces cannot be reconstructed so that they will work in a satisfactory manner.

Figs. 29 and 30 show a model of the " N " furnace immersed in water; a stream of colored kerosene flows into the heating chamber from the firebox. The two half-tones show the outflow of the waste gases through openings pierced in the hearth of the furnace. Fig. 29 shows that with this method of outflow of the waste gases there remains upon the sole or hearth of the furnace a layer of cold air. The rise of the hearth forms a *pocket* from which the colder and heavier gases cannot flow by gravity. This is a very serious defect of continuous reheating furnaces having the roof and the hearth rising from the firebox end toward the charging end. The ingots or billets heating on the hearth of the furnace chill the gases, and these chilled gases cannot by any possibility reach the chimney, since they are heavier than the hot gases.

In Fig. 30 the current of colored kerosene has been increased, but it has not been possible to force out the water from the pocket on the hearth, as the pressure has not yet become higher than the water pressure, that is to say, the atmospheric pressure. When this point is reached a portion of the kerosene escapes through the interstice or small opening between the sheets of glass forming the

sides of the model. It is evident that this is not a desirable manner of working as the outflow of the chilled gases from the hearth will take place through the working doors, instead of through the waste gas opening to the chimney.

In practice, therefore, a furnace of this design will work under the conditions shown in Fig. 29, and the ingots or billets will not be well heated - except on their upper portion, since their lower portion will rest in the layer of chilled gas on the hearth of the furnace and the cold air drawn in through the working doors. This prolongs the time required to heat the ingots, increases the defects in the metal, etc.

The problem of the rational construction of the continuous